

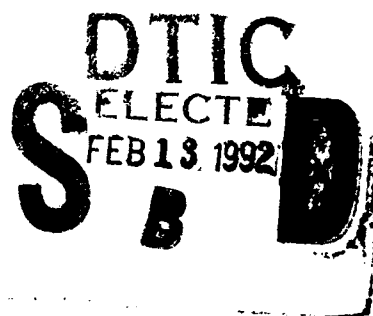
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# NAVAL POSTGRADUATE SCHOOL

## Monterey, California

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# THESIS

ENHANCING THE PHYSICAL FITNESS  
IN THE MARINE CORPS

by

Thomas N. Collins

December 1991

Thesis Advisor:

Russel H.S. Stolfi

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**Enhancing The Physical Fitness in the Marine Corps**

by

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Captain, United States Marine Corps  
B.S., University of Rhode Island, 1978

Submitted in partial fulfillment of the  
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

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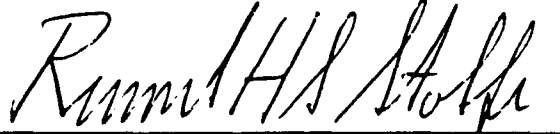
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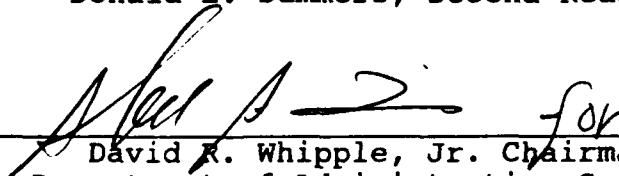
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## ABSTRACT

Empirical tests have demonstrated a direct correlation between physical fitness and performance during sustained military operations. Physical is probably the single most important factor for the individual Marine. Currently, the Marine Corps does not promote a "holistic" approach to physical fitness that accentuates the development of a Marines strength, anaerobic and aerobic power. The objective of this thesis is to present how physical training in the Marine Corps is presently conducted and show how it can be enhanced.

The focal point of a quality fitness program is the base fitness center, and although the Marine Corps concurs that fitness is a key ingredient to combat readiness, it chooses to operate the fitness centers as a recreational asset. This thesis identifies fitness centers (gyms) as the core for implementing an aggressive fitness program within the Marine Corps and argues that they should run as operational entities and completely financed with appropriated funds.

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## I. INTRODUCTION

*No man expects to live forever. But the  
man in perfect physical condition will  
live longer - especially in combat.*

*Hap Arnold*

### A. BACKGROUND

Mention the word Marine and the image of a highly motivated, physically fit and well disciplined individual springs to mind. Starting with "Boot Camp", physical fitness indoctrination includes maintaining a healthy body, developing endurance to withstand the stress of prolonged activity and adverse environment, ensuring the capacity to endure the discomfort that accompanies fatigue, and maintaining combat effectiveness. Attaining and maintaining the desired level of physical fitness depends on a training program that focuses on strength, endurance, agility, and coordination. Unfortunately, once a Marine is assigned to a Fleet Marine Force unit, the emphasis on physical fitness diminishes and seems to encompass little more than being able to pass the Marine Corps physical fitness test.

With the development of the technical ability to maintain almost the same level of combat intensity during the twilight and night-time hours as during daylight, it appears that combat in the future will require Marine Corps units to perform continuously in periods of high intensity activity

periods exceeding 48 hours. Operations may be preceded by a rapid deployment across several time zones, and may take place in extreme environments. Such movement and action was demonstrated during Operations Desert Shield and Desert Storm.

The conduct of war has many physical demands. These include the handling and movement of supplies and munitions, the activity associated with the establishment of fortified positions (including trenching and minelaying) and most importantly the movement by foot while carrying weapons and equipment. The ability to continue intense physical work is limited by a variety of physiological and psychological factors. The decrement in the capacity to perform physically, is called fatigue and as Vince Lombardi, the famous football coach said, "fatigue makes cowards of us all".

## **B. OBJECTIVE**

Physical fitness--an effective state of combat physical conditioning--is probably the single most important factor for an individual Marine. The Marine Corps presently organizes fitness predominately as a nice to have recreational activity. The objective of the thesis is to present how the physical training of the individual Marine is handled today and to show and how it may be improved. Specific emphasis will be placed on changing the operation of fitness centers world wide from a recreational style to an operational one, and the reestablishment of the Marine Corps Physical Fitness Academy at Quantico, Virginia, as a center point for the coordination



of combat conditioning, and the support of combat physical conditioning by congressionally mandated operational funds.

#### **C. SCOPE**

The scope of this thesis is extremely broad. The author will examine the issue of physical conditioning as it pertains to an air-ground combat force. The thesis will concentrate on analyzing current Marine Corps physical fitness programs and the operation of base/station fitness centers.

#### **D. APPROACH**

The existing 1st Marine Expeditionary Force (MEF) physical fitness programs and the operation of the base/station fitness centers served as a baseline for the author's analysis. Due to time and financial constraints, the author could not examine the fitness programs and the operation of fitness centers within II and III MEF. The author, however, who has completed tours of duty in II and III MEF, makes the assumption that what is being done in terms of physical fitness in I MEF is similar to that in II and III MEF units.

Much of the information for the thesis was obtained from Marine Corps organizations located at Camp Pendleton, Ca. The organizations were: G-3 (training) 1st Marine Division; Headquarters and Service Battalion, Marine Corps Base; Assistant Chief of Staff/Comptroller Marine Corps Base; Assistant Chief of Staff/Morale, Welfare & Recreation Marine Corps Base. Other literature source included the Naval

Postgraduate School Library, the Defense Logistics Systems Information Exchange, the Defense Technical Information Center and various other organizations.

#### **E. ORGANIZATION**

This thesis is organized into four chapters. Chapter II examines the armed violence of modern warfare and its impact on physical requirements. In addition, the chapter focuses on an Army report which studies the effects of sustained physical activity during infantry operations. The chapter also reviews the German Armed Forces Sports program. Chapter III discusses the current Marine Corps physical fitness requirements programs and their relation to the Morale, Welfare and Recreation office. Chapter IV details specific steps the Marine Corps should take in establishing combat conditioning centers. In Chapter V the author presents a new style and system for combat conditioning with specific conclusions and recommendations to improve physical training within the Marine Corps.

## II. BACKGROUND

### A. INTRODUCTION

In this age war continues to appear in its natural form, as bloody armed conflict among nations, in which each side strives for the political overthrow of its opponent often through the annihilation of its armed forces.<sup>1</sup> Attempts to frighten an enemy sufficiently to cause him to submit to our will by simply moving masses of troops to gain victory without battle through maneuver alone cannot accomplish their purpose. The experience of the Napoleonic wars has taught us that actions of the above nature lose their effect as soon as the opponent resolves to make war in earnest and to strike with a swift sword.<sup>2</sup>

Such a state of affairs became clearly evident during Operations Desert Shield/Storm. It took more than the large buildup of Coalition Forces and a naval blockade to remove Iraq from Kuwait. It took armed violence to liberate Kuwait from Saddam Hussein's massive ground occupation.

The United States and its Western allies have used military force 220 times since the end of World War II. About 80 of these military actions have involved low-level conflict,

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<sup>1</sup>Lt. General Von Der Goltz, The Conduct of War, (Kansas City, MO: The Franklin Hudson Publishing Co., 1896), p. 17.

<sup>2</sup>Ibid., pp. 15-18.

while 15 have involved major task forces and extended, fairly intense conflict, and all 15 have occurred in the Third World.<sup>3</sup> At the same time, the West has become steadily more dependent on imports of oil, minerals, and raw materials from Third World states, and it has encountered a growing military challenge from these same states. The resulting western involvement in the Third World is symbolized by the fact that the United States alone has defensive alliances and treaties with 26 Third World nations and informal agreements with many others.<sup>4</sup>

It would be naive to think that the United States will not be in a conflict in the not too distant future. As the nation's force in readiness, the Marine Corps must be able to complete its primary mission of closing with and destroying enemies through superior fire power. War is an act of armed violence pitting man against man and not some futuristic scenario of push button technology. Even in today's high-tech world of sophisticated weaponry, it's still the Marine and his rifle that will actually secure victory. To secure victory, the Marine Corps must be operationally ready. Operational readiness in the Marine Corps does not just equate to equipment readiness; it must also include the physical

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<sup>3</sup>Barry M. Blechman, Stephen S. Kaplan, Force Without War, Journal of Strategic Studies, Vol. 7, No. 1, (Washington, D.C.: Brookings Institution, MAR 1984), p. 43.

<sup>4</sup>Anthony C. Cordesman and Abraham R. Wagner, Lessons of Modern War, Vol. 1, (Colorado: Westview Press, 1990), p. 158.

readiness of the individual Marine. The ultimate striking force in the Marine Corps is a Marine and his rifle, but the force is only effective if properly conditioned. Physical fitness of a Marine, additionally must be integrated with his personal weapon and with other weapons and support systems he employs in combat.

As long as man has been on the planet earth, he has been concerned with his survival. Whether one subscribes to the concept of "survival of the fittest" or divine evolution, the reality is that man, in his quest for survival, down through the ages, has become less physically involved with his environment and more dependent on machines and technology to master it. The transition from "back power" to "brain power" has had a negative impact on man as a physiological being. Lack of vigorous physical activity, both at work and play, has contributed to a decline in physical fitness for modern man. Today the typical American is older physically than years give him the right to be and the average young man in this country has a middle-age body.<sup>5</sup>

Deterioration in physical condition is of great concern to the Marine Corps because it must recruit from America's youth and develop it mentally and physically so that it may earn the title - U.S. Marine. In fact, much of the training activity at the Marine Corps Recruit Depots is spent on physical

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<sup>5</sup>Air Force War College, Air Force Weight and Fitness Programs, (Alabama: Maxwell AFB, MAR 1989), p. 1.

conditioning. Such a heavy requirement for physical training is not only designed to instill discipline but more importantly it is intended to develop the recruit physically. No other service trains its basic recruits as hard physically as does the Marine Corps. In fact, if a recruit is having difficulty attaining the required physical fitness levels, he is sent to a physical conditioning platoon (PCP). The PCP is designed to correct the recruit's physical weaknesses so that he may return to the main stream recruit training and graduate. Unfortunately for most Marines, once they graduate from "boot camp", they infrequently maintain that level of physical fitness again while assigned to a Fleet Marine Force unit.

The Department of Defense shares this concern for the effects of low physical fitness among young Americans. Military personnel must be able to handle the physical and psychological rigors of military duty; the citizenry expect it and depend upon it for the defense of the state. The Department of Defense has directed the services to establish viable physical fitness and weight control programs consistent with their missions. This author contends that the Marine Corps current physical fitness program exists to satisfy Department of Defense requirements and does not provide for effective combat conditioning. The Marine Corps requires a sound, credible fitness program, tailored to its needs.<sup>6</sup>

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<sup>6</sup>Ibid., p. 47.

## B. EFFECTS OF CONTINUOUS MILITARY OPERATIONS ON PHYSICAL FITNESS

Continuous operations may be defined as combat actions that are uninterrupted for a period of 24 hours or more. Such operations characterize the high-intensity, short-term war which has become the trend since the end of World War II. The 1967 and 1973 war between Israel and Egypt, the 1982 Falkland Islands War, and finally the 1991 Gulf War were over within a matter of days. During these short periods, the countries involved were engaged in very intense combat resulting in heavy casualties to the losers. All such engagements have relied on combined arms to support the infantryman and to inflict the maximum damage on the enemy. In an article on the British experience in the Falklands, Major Jonathan Bailey stated that the:

*The standard of fitness of the British Army was shown to be extremely high and not just in the Parachute Regiment which has its own special requirements, so the emphasis on physical training paid off, some Argentine prisoner refused to believe that some units had marched all the way from San Carlos to Port Stanley, insisting that they must have used helicopters.'*

Based on recent historical experience, one can assume, future conflict will be characterized by high intensity operations lasting for periods which will severely test an individual's capability to maintain efficient performance. It is apparent, therefore, that high priority needs to be placed on assessing

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<sup>7</sup>Major Jonathan Bailey, MBE Royal Artillery, Training For War, Falklands 1982, Military Review, No. 9, (Ft. Leavenworth, KS, 1983), p. 59.

the physical demands and formulating physical fitness requirements for the combat soldier who must perform under such conditions.

An individual's capacity to perform physical work is determined by several factors, among which the following should be considered:

- Energy Liberation: The release of energy to perform physical tasks.
- Aerobic Processes: Pertaining to metabolic processes which occur only in the presence of oxygen.
- Anaerobic Processes: Pertaining to metabolic processes which take place without the participation of oxygen.
- Neuromuscular Function: Pertaining to factors affecting both nerves and muscles.
- Muscle Strength: The maximal force that can be generated in a single voluntary effort of short duration.
- Coordination Technique: Harmonious combination or interaction of physical movements.
- Psychological Factors: Pertaining to, dealing with, or affecting the mind especially as a function of motivation.
- Motivation: Inducement or incentive to perform a task.
- Tactics: Plan or procedure to promote a desired result.

All the above mentioned determinants are involved in most military activities. However, the relative significance of the different determinants varies from one activity to another and is also dependent upon factors such as intensity, duration and type of work. In some jobs (e.g., office work) the energy liberating process are taxed only to a minor extent. In other activities (e.g., cross country walking, skiing or running with a back pack and other military equipment) large muscle



groups are activated for relatively long periods of time. In these types of activities, the energy liberating processes are taxed to a very large extent. It can be concluded that various types of military activities impose different demands on the body, and that the different factors mentioned above are taxed in varying degrees. The capacity to perform different types of work also varies considerably from one person to another, and, finally, physical performance capacity is affected by several factors such as age, sex and state of physical training.

Evidence has also accumulated, indicating that there is a large variation in the demands of different military activities, and that the ability to perform different jobs varies widely from one person to another.<sup>8</sup> In many cases, however, military units, which consist of a large number of individuals, are suppose to work and operate together and should be physically homogeneous. If the unit is composed of individuals with quite different physical performance capabilities, such a situation can create serious problems. The unit chain may not be stronger than its weakest link. It is of great practical importance, therefore, that the Marine Corps establish an aggressive physical fitness program that

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<sup>8</sup>John F. Patton, James A. Vogel, Andrew I. Damokosh, and Robert P. Mello, Effects of Continuous Military Operations on Physical Fitness Capacity and Physical Performance, (Natick, Massachusetts: U.S. Army Research Institute of Environmental Medicine, Oct 1987), p. 8.

enhances the performance of its most important asset, the individual Marine.

### **C. FITNESS IN INFANTRY OPERATIONS**

The effects of sustained physical activity and sleep loss on human performance in the industrial setting have been studied in both laboratory and field environments over the past few years (Alluisi and Morgan 1982). More recently efforts have been directed to assessing such effects in military sustained operations by employing prolonged, combat-simulated scenarios (Haslam 1981, 1982, 1985; Murphy, Knapik and Vogel 1984; Myles and Romet 1986; Legg and Patton 1987).<sup>9</sup> As mentioned earlier, such studies are dictated by the notion that future conflicts will be characterized by high intensity operations lasting for periods exceeding an individuals capability to maintain efficient performance. The study results also apply to a variety of crisis situations requiring sustained physical activity and sleep deprivation.

The U.S. Army Research Institute of Environmental Medicine conducted a study entitled, "Physical Fitness and Infantry Operations." The study was designed to investigate the role of physical fitness in infantry operations.<sup>10</sup> Tests measuring various components of physical fitness were administered to soldiers before and after a realistic combat

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<sup>9</sup>Ibid., p. 1.

<sup>10</sup>Ibid., p. 9.

scenario and related to evaluations of field performance. The components of fitness examined included aerobic capacity, body composition, anaerobic capacity, and muscle strength.

The study observed 34 male infantry soldiers assigned to the 9th Infantry Division at Ft. Lewis, Washington. They represented four intact rifle squads, although it was necessary to make several substitutions in the squads due to other requirements. After a medical screening, subjects were briefed regarding the purpose and the risks of the study and gave their informed voluntary consent to participate.

The study utilized a pre-test, post-test design with a simulated combat exercise interposed between the two tests. Pre-testing was conducted three to five days before the exercise began and post-testing the morning immediately following the exercise.

The field exercise consisted of five consecutive days of infantry operations requiring both offensive and defensive maneuvers on foot. The terrain consisted of heavily wooded land with medium to thick underbrush. The maximum difference in elevation was 60 feet. All field requirements were based on events described in the Army Test Program (ARTEP) T-15<sup>11</sup>. Performance was rated on each ARTEP mission as successful (GO) or unsuccessful (NO-GO) and all squads began the exercise with a 10 km road march out to the appropriate training area. Four

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<sup>11</sup>Dept. of the Army, Army Training and Evaluation Program for Infantry Battalions, ARTEP No. T-15, (Ft. Leavenworth, KS, 1979).

hours of sleep were permitted each night and soldiers carried all necessary equipment and supplies for five days; however, every 24 hours, a food (field rations) and ammunition (blanks) resupply was conducted at a predetermined location. Pack weights were between 20-30 pounds and a radio telephone operator (one per squad) carried a radio weighing 12 pounds.

For the pre-test and post-test, subjects were required to perform an army physical fitness test. The Army physical fitness test required the soldiers to complete as many push-ups as possible in two minutes, complete as many situps as possible in two minutes, and run two miles as fast as possible.

Subjects fired M-16 rifles at targets on a standard Army firing range. Targets were pop-up silhouettes which were shot down as they appeared. Each subject was provided 40 rounds of ammunition and a score of one point was given for each hit target. This was called the record for fire test.

Aerobic capacity was measured using a discontinuous, incremental treadmill. The soldiers ran six miles per hour for six minutes and then rested for five to ten minutes. The process was repeated two to four times, each three to four minutes in length. During the last minute of each run, expired gases were collected into vinyl bags. Oxygen and carbon dioxide were measured with a fuel cell and infrared analyzer, respectively, and gas volumes with a tissot spirometer.

Strength testing included an isometric evaluation of the upper torso, leg-hips, trunk extensor, handgrip and the upright pull. Three maximal contractions of 3-4 seconds duration were averaged for data analysis. Each contraction was separated by a rest period of at least 30 seconds.

Dynamic lifting capacity was measured by having subjects lift a rack of weights to a height of 183 centimeters. Subjects started in a squat position bending at the knees, and grasped the handle of the device, stood up and pressed the weights, the first weight lifted started at 35 lbs and the final score was the heaviest load lifted to 183 centimeters.

The test was thorough and its major finding that the soldiers had reduced upper body anaerobic capacity and strength following the five day field exercise. Lower body strength also decreased after the exercise, but the lower body anaerobic test were mixed. A major contributor to the decline in upper body exercise capacity and lower strength may have been the load carried by the soldiers. Field observations made by the evaluators, medics and research team, suggested that some soldiers had difficulty carrying their packs. Soldiers had additional difficulty when required to carry the radio plus their packs and others had problems carrying a man on a litter (as required during some missions).

A second major finding of the study was the relationship between the individual performance scores and the physiological measurements. While the U.S. Army Research

Institute of Environmental Medicine ran correlations between all measurements and the performance scores, the only significant correlations involved record fire and five upper body anaerobic muscle strength measures. It would appear from this study that upper body exercise capacity is important for infantry operations and is subject to decrements during field operations.

The study documented significant declines in upper body strength and anaerobic capacity resulting from participation in a five day infantry field exercise. Significant correlations were also found between subjective evaluations of field performance and upper body strength and anaerobic capacity. These results demonstrate the importance of upper body exercise capacity for successful infantry operations and suggest that physical training, especially for the upper body should be emphasized.<sup>12</sup>

#### **D. GERMAN ARMED FORCES SPORTS PROGRAM<sup>13</sup>**

Sports and physical training have traditionally played a prominent role in the development and training of the German soldier. This tradition has continued throughout the reestablishment of the German Armed Forces after World War II. Since the first troop units were reorganized in 1956, the most

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<sup>12</sup>D.R. Haslam, The Military Performance of Soldiers in Sustained Operations, Aviation Space Environmental Medicine, 1984

<sup>13</sup>Army Training and Doctrine Command Liaison Office, The German Armed Forces Sports Program, (APO New York 09080, 21 Nov. 1981).

modern scientific and practical methods have been used to maintain physical fitness and morale in the German Armed Forces.

In today's German Armed Forces, the sports program continues to be an essential part of the overall development and training of the individual soldier, regardless of military specialty. Each unit's or organization's training schedule provides time for the soldier to attain and maintain his full physical potential. In addition, he is provided with the required equipment, to include a top quality sports uniform (jacket, trousers, shorts, shirt, socks, and shoes), and has ready access to sports facilities. The German Armed Forces sports program is carried out under the direction of trained, qualified sports and fitness instructors.

The overall responsibility of the sports and fitness program rests with the Inspector General of the German Armed Forces. The heart of the program, however, is the Warendorf Sports School. The mission of the school is to serve as a sports and fitness training center for the Army, Navy, and Air Force, and to conduct medical research and evaluations related to sports and fitness. In order to accomplish this mission, the school has a staff of trained civilian instructors, as well as a small military staff.

One of the most interesting aspects of the school's mission is the training of Germany's top military sportsman for national and international competition. Top young amateur

or professional sportsman serve their full 15 months of mandatory active duty in the sports school. They are required to participate in 30% of the normal training program for military personnel. The remaining 70% of their time is spent in improving their skills and training other students at the school.

Initial and advanced training is provided at the school for Officers and Non-Commissioned Officers (NCOs) from all branches of the service. These personnel then return to their units with either a primary or secondary duty of sports instructor. Advanced training is given to medical officers who must later evaluate personnel for participation in the program. In addition, extensive medical research into optimum training methods and techniques is conducted at the sports school. Injured and handicapped soldiers are also rehabilitated.

The Warendorf Sports School sets the tone for physical training throughout all the services. The school's facilities are extensive and ultramodern, and the Army, Navy, and Air Force service schools are also staffed with certified physical training specialists who train Officers and NCOs attending various courses of instruction. There are currently over 110 civilian instructors in the German Armed Forces. These instructors conduct physical training for all officers and NCOs in the German Armed Forces--they train the trainers.



Each troop unit is also required to have a cadre to conduct its own sports program. The following organization exists in each unit:

- Sportleiter (Commanding Officer or NCO in charge of sports training)
- Fachsportleiter (sports specialist)
- Hilfssportleiter (assistant to commanding officers/NCOIC)
- Reigenfuhrer (person responsible for organizing the sports and fitness program)

Each Officer and NCO, through training at the Warendorf Sports School or service school, become a trained sports instructor. Each company commander is a trained Sportsleiter, and each squad leader is a trained Reigenfuhrer. The Fachsportleiter is specially trained at the Warendorf Sports School in a variety of sports and fitness programs.

The document which outlines the program both in theory and regulation is Zentralen Dienstvorschrift (ZDR) 3/10. This regulation, entitled "Sports in the Bundeswehr," is the "bible" for conducting the program at all unit levels. It spells out mandatory requirements to be met by each individual and unit. The regulation emphasis is on conditioning, coordination, and physical development. The program is designed not only to promote physical fitness, but also develop the soldier's interest in physical fitness. The underlying philosophy is that a program which stresses sports and fitness and fosters competition, will produce a more physically fit soldier than will a more regimented, military

type training program. One does not see a German soldier doing a version of the "daily seven" calisthenics, etc, instead one sees an interesting, enjoyable program which produces physically fit soldiers who are fully capable of performing their military duties under any circumstances.

The German Armed Forces sports program is mandatory for all personnel under the age of 50, to include senior ranking officers and enlisted. Older personnel may participate voluntarily, and based on advice of the local physician and sports instructor usually this is the case.

The basic training program for every soldier is established in the Gesamtausbildungsplan (GAP), or total training plan. The GAP for an Nuclear, Biological, and Chemical (NBC) soldier differs from that of an Infantryman in some respects, but basic subjects like sports and fitness are the same for everyone. A total of 527 hours (13 weeks) is allowed for basic recruit training. Of this time 40 hours are spent on sports. The sports program consists mainly of weight conditioning, swimming, and various competitive type sports such as soccer, volleyball, wrestling, basketball, etc. While the soldier is trained in other tasks which contribute to his physical fitness (foot marches, obstacle courses, etc.), these are not considered to be part of the sports and fitness program. Once a soldier completes basic recruit training, he proceeds to his assigned unit to complete his training. This unit training, under the direction of the Officer or NCO in

charge concentrates on sports and fitness events which improve coordination, conditioning, and stamina. For troops who have completed their training program, two weekly ninety minute periods are mandatory. Participation is mandatory, and a record of each soldiers' performance is maintained as part of his personal file. The sports instructor and commander monitor his progress. The commander of each unit or organization is responsible for conducting the program and he has the resources to do so--trained instructors, equipment, facilities--and for the most part, soldiers who are not only required to participate but also are willing participants in the program.

In addition to physical fitness tests, the overall fitness of a unit is determined through competition. Sport competition is held once a year, usually between October and June. Participation in the event is mandatory for all able bodied personnel age 40 and under, regardless of rank. Competitive events include: a 50-100 meter dash, broad jump, shotput (16 lbs.), and a 3-5000 meter run. The ZDV 3/10 specifies the conduct of the competition and the presentations of awards. Awards range from certificates presented by the Company Commander to those presented by Inspector General of the German Armed Forces. One of the gauges used to evaluate a company/battalion/regimental commander, is how well his unit does in this yearly sports competition under the watchful eye of the Inspector General.

Off-duty sports and competition are encouraged. Service members have ready access to gymnasiums and equipment during non-duty hours. Virtually every installation has use of a gym, track, playing field and swimming pool. These facilities are under the control of operational commander and not the recreational office.

Empirical tests have demonstrated a direct correlation between physical fitness and performance during sustained military operations. The German Army has taken this to heart and has established an operational training program with a physically fit German soldier as its foundation. The Warendorf Sports School is a key element in the success of the German Armed Forces sports program. Its comprehensive course of instruction insures that the soldiers/sailors/airmen are properly trained to execute the program. The program itself is interesting, non-repetitive and fosters a competitive spirit. It clearly maintains the physical fitness of the Armed Forces. The availability of excellent sports facilities and the issuance of appropriate sports attire contribute to morale. The German Armed Forces sports and fitness program is an outstanding one, which the U.S. Marine Corps would do well to study and perhaps eventually adopt.

### III. PHYSICAL CONDITIONING WITHIN THE MARINE CORPS

#### A. INTRODUCTION

Participation in athletics and a structured physical fitness program improves a Marine's mental outlook on life, increases stamina, provides for unit cohesion, fosters camaraderie and intensifies esprit-de-corps. The experience gained from competition and physical training also teaches a Marine to remain calm when the going is tough; to conserve energy when the occasion permits; to strive for disciplined excellence and to develop teamwork for mission accomplishment. It will also help make each Marine a fearless, courageous combatant capable of carrying on beyond ordinary human endurance, and so tough and physically coordinated that any hardships can be overcome. Marines must be trained for the greatest physical test in life, victory on the battlefield.

When Brigadier General Douglas MacArthur was the Superintendent of the U.S. Military Academy at West Point, he made intramural athletics compulsory for the entire corps of cadets. He composed a quatrain, which clearly associates the relationship between athletics and combat:

*Upon the fields of friendly strife are sown the seeds that,  
upon other fields, on other days will bear the fruits of  
victory.<sup>14</sup>*

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<sup>14</sup>E.M. Flanagan Jr., Before The Battle, Army (Arlington, VA: Association of the United States Army, June 1991) pp. 57.

Before it reaches that level of contention, the Marine Corps must prepare itself physically for the rigors of modern combat. A medium for achieving this goal is through the conduct of a structured physical fitness program that encourage maximum participation by all personnel. Getting everyone involved is the key to success. The knowledge that success is dependent upon physical fitness, discipline, and a healthy mental outlook must be imbued within each Marine through continued exposure to physical fitness training. The importance of a viable physical fitness program to unit cohesiveness, morale, and quality of life cannot be over emphasized.

#### **B. THE GENERAL FACTORS ENCOMPASSING PHYSICAL CONDITIONING**

The ability to perform physically demanding tasks is a function of two broad factors; the capacity for muscular contraction and the neural control of body movement. The latter, which may be referred to as motor fitness, includes components of neuromuscular control such as coordination, speed, agility and skill. The first factor, commonly referred to as physical fitness, represents the metabolic or energy generating capacity for muscular exercise. In this context physical training can be subdivided into three separate categories based on the three sources of energy for muscular contraction. These three categories are; strength, anaerobic and aerobic power training. To develop a "holistic" physical training program, it must focus on enhancing an individuals

strength, anaerobic and aerobic power. A viable physical training program must incorporate these three categories.

#### **1. Training To Increase A Marines Strength**

Strength can be increased through a process of progressive resistance training. As the muscle becomes stronger, greater weight or resistance must be applied in the training process to yield continued improvements. A very high intensity (90-100%) of effort, rather than a prolonged low to moderate intensity is most effective in strength development. Training with resistances of 80-90% of maximum is most effective in enhancing muscle hypertrophy, a primary factor in strength development.<sup>15</sup>

Strength Training in the Marine Corps does not always receive the same attention given to aerobic training. This is due in part to the:

- Lack of strength training equipment.
- Lack of appreciation of strength requirements for military performance.
- Lack of time for individualized methods of strength training
- Lack of understanding of the basic principles of strength training

Large group exercises (calisthenics) and drills (log, rifle) are still commonly used but are likely to be relatively ineffective in enhancing muscular strength. In the Marine Corps, most strength is probably gained from repetitively

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<sup>15</sup>John Atha, Strengthening Muscle, Exercise and Sport Science Review, Vol. 9 (New York: Academic Press, 1981) pp. 38-45.

doing one's job, unless the Marine is self-motivated to weight train at the base/station fitness center during his off-duty hours. The use of individualized progressive weight resistance is necessary for time-efficient strength training. Weight machines, bar bells, weighted boxes, or resistance provided by another person is necessary to produce a "strength reserve" the emergency situations during war-time.

## **2. Training To Increase A Marines Anaerobic Power**

The term anaerobic power can be used synonymously with muscular endurance. It refers to that aspect of exercise capacity characterized by brief (5 to 60 seconds) high intensity effort that derive its energy primarily from anaerobic glycolysis. The ability to sustain a high intensity constant (isometric) or repetitive (dynamic) muscular task of 5 to 60 seconds depends on the mass and nature (fiber type) of muscles involved and the capacity of anaerobic pathways for glycolysis within these fibers. Metabolically, anaerobic power is related to the ability to convert glycogen (the form in which carbohydrates are stored in human tissue) to lactic and pyruvic acid (carbohydrate metabolism formed from either glucose or glycogen by glycolysis) and, at the same time, tolerate the increased acidity due to their accumulation. Thus, as one improves anaerobic power through training, the following changes take place:

- Increases in glycolytic enzyme content of the muscle.
- Increased levels of substrates-glycogen and phosphogens.



- Enhanced tolerance for lactic acid levels in the muscle fiber and greater ability to covert lactic acid.<sup>16</sup>

Fitness training for improving anaerobic power is typically carried out in the form of high intensity interval training. This mode of training is a series of repeated bouts of exercise alternated with periods of relief. In this case, the periods of exercise are of a very high intensity so that the anaerobic metabolic pathways are engaged. The rest or relief periods enable a person to repeatedly load the anaerobic system without achieving complete exhaustion. Such a training program builds a tolerance to accumulated lactic acid. For example, one would sprint near maximum for one minute followed by three minutes of recovery. Several repetitions of this cycle causes lactate to "stack up" and force the muscles to accommodate these high lactate concentrations.<sup>17</sup> Additional anaerobic power building exercises are: shuttle runs and man carries which are whole body events, and pushups, chin-ups (no kipping) and sit-ups which enhance muscular endurance for specific muscle groups.

### **3. Training To Increase A Marine's Aerobic Power**

The best understood component of physical fitness is probably that of aerobic power. Despite mechanization and the

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<sup>16</sup>Nato Research Study Group on Physical Fitness, Physical Fitness in Armed Forces, (North Atlantic Council: 3 October 1986), p. 23.

<sup>17</sup>P.D. Gollnick and L. Hermansen, Biomechanical Adaption to Exercise: Anaerobic Metabolism, Exercise and Sport Science Review, Vol. 1 (New York: Academic Press, 73) pp. 36-37.

fact that Marines often ride (trucks) or fly (helicopters) to their destination, the vast majority of daily military tasks probably fall into this category. A lot of emphasis is placed on aerobic power training in the Marine Corps because aerobic capacity is linked with the performance of military tasks and its use for health maintenance, body weight control, building of unit esprit, and simplicity in equipment requirements and test administration.

The capacity to generate energy through the aerobic (citric acid) metabolic pathway is a function of the various components of the oxygen transport system. This begins with pulmonary ventilation and ends with oxidation of substrates in the mitochondria. The rate limiting component along this chain may vary depending upon existing conditions but usually is thought to be the heart's pumping capacity or cardiac output.<sup>18</sup>

Increases aerobic power due to physical training depend on such factors as:

- Initial level of fitness.
- Frequency of training.
- Intensity of training.
- Duration of training.
- Mode of training.

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<sup>18</sup>Nato Research Study Group on Physical Fitness, Physical Fitness in Armed Forces, (North Atlantic Council: 3 October 1986), p. 25.

Training frequency should be three to five times per week. Less than three times results in some loss between sessions while more than five times may invite an excessive injury rate. The intensity of training depends upon whether an improvement is desired or whether a level is to be maintained. Maximal heart rate intensities of 60-80% of are typically used. Duration depends on the training objective but typically ranges from 20-60 minutes. The mode of training should be selected to utilize large muscle masses in a rhythmic fashion so that cardiac output and oxygen transport are taxed.<sup>19</sup> Running, conditioning hikes, swimming and cycling are examples of aerobic training modes.

#### **C. ANALYZING CURRENT MARINE CORPS PHYSICAL TRAINING PROGRAMS**

Given the "holistic" approach to physical fitness training, the author examined the Marine Corps physical fitness doctrine and found it to be inadequate. Currently, the primary guidance for Marine Commanders in terms of physical fitness is MCO 6100.3J. The order states that:

*The proper goal of the Marine Corps' physical fitness training program is the success of Marines in combat. To this end, physical fitness must continue to be an integral part of the Marine Corps' culture.*

*Unit Commanders directed physical conditioning programs (PCP) will provide for individual development through supervised individual effort maintained by judicious leadership at all levels of command. In order to develop the desired level of physical fitness, unit commanders are advised that a minimum program of three hours per week is*

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<sup>19</sup>M.L. Pollack, The Quantification of Endurance Training Programs, Exercise And Sport Science Review, Vol. 1 (New York: Academic Press, 1973) pp. 21-25.

mandatory. The program must encompass at least three exercise periods weekly; the minimum desired length for each exercise period is 60 minutes. Shorter periods may be authorized by the unit commanders if dictated by the local training situation.

Unit commanders are encouraged to use the normal working day to satisfy this training requirement. However, commanders are authorized to conduct the required physical fitness training during off-duty hours when the mission requirements, workload, personnel status, or other significant factors preclude fulfilling this requirement during duty hours. This authorization can be granted for individual or unit training.<sup>20</sup>

The major shortcoming of this order is that it does not make physical training (combat conditioning) a mandatory requirement during the normal work day. This allows the Commanding Officer a loop hole when it comes to training his Marines physically. Other requirements on a unit's training schedule take priority and this is incorrect. When it comes to marksmanship training in the Marine Corps, everything else takes a "back seat". When a Marine is required to qualify with his T/O weapon, the Commanding Officer has no reprieve; his Marine must fire his weapon to qualify during normal working hours. A physically fit Marine is the foundation of a combat effective Marine Corps. The emphasis on physical training must be stronger or parallel that of other training requirements.

Marine Corps Order 6100.3J further states the definition of physical fitness and the different types of conditioning (strength, anaerobic, and aerobic training). The initial

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<sup>20</sup>Marine Corps Order 6100.33J, Physical Fitness, (Washington, DC: 29 February 1988) pp. 2-3.

paragraphs of the order use strong verbiage in identifying the need for a commander to establish a viable fitness program for the Marines under his care. Unfortunately, the order does not address the requirement for a holistic approach to physical training, and doesn't identify the various physical training methods or different training programs a commander can use to enhance the physical fitness of his Marines. Therefore, unless a commander has a thorough understanding of the total fitness concept, his Marines will be doomed (faculty physical conditioning doctrine) to the standard before or after duty hours "daily seven" calisthenics and a three mile-run. It is the author's opinion (developed from experience) that most units within the Marine Corps physically train only to be able to pass the required Marine Corps physical fitness test. This is not training for the physical rigors of combat. This is in stark contrast to the German Armed Forces, which have established a formal, structured physical fitness program, designed to support the commander's need to enhance the physical readiness of his soldiers/sailors/airmen.

When discussing progressive resistance training, MCO 6100-3J suggests using the base/station fitness centers as a resource for improving a Marines strength. This is virtually impossible because the fitness centers are considered a recreational facility and not an operationally controlled entity such as the rifle range. Furthermore, most of the Marines who manage the fitness centers are not qualified as

fitness instructors. They are usually Marines who are assigned as a Fleet Assistance Program (FAP) quota for six months to one year. There are a few rarities, such as Staff Sergeant Sylvester Anderson (world class powerlifter) who managed the area 13/14 Combat Conditioning Center at Camp Pendleton, California, but for the most part, Staff Sergeant Anderson is the exception not the rule. Fitness centers are classified as recreational assets, and therefore are under the financial control of the Morale Welfare and Recreation (MWR) Office and are rarely used for organized unit training. In most cases in I MEF, if a Marine wants to use the fitness center, he must use it during off duty hours. Only the Marines who are self-motivated towards physical improvement will use the fitness center during their off-duty hours. As a result, the strong get stronger and the weak get weaker.

There are a few exceptions in the Marine Corps where the commander has a thorough knowledge and knows the importance of the total fitness concept. One exception is LtCol J.B. Egan, Commanding Officer, Headquarters and Service Battalion, Marine Corps Base, Camp Pendleton, California. Even with a decentralized unit such as his, LtCol Egan has established an aggressive physical conditioning program that not only enhances the level of fitness of his Marines but also builds esprit, morale and most importantly confidence in themselves. Everyone is involved in the physical training program (including the commander and the Sergeant Major). There are

no cheer leaders, only participants. Marines under his command convert the T-shirt awarded to the winner of the NCO Iron Man contest, which is a challenging test of a Marine's strength, stamina, endurance, and will to win.

The priority LtCol Egan places on physical fitness differs significantly from that of most commanders within the Marine Corps. The lack of operational emphasis on combat conditioning, coupled with the de facto situation of physical fitness within the Marine Corps being recreational has shifted the onus of responsibility from the commander to MWR.

#### **D. MORALE, WELFARE AND RECREATION**

Moral, Welfare and Recreation programs are established for the purpose of providing active duty military and other authorized patrons with articles of goods and service necessary for their health, comfort and convenience. They also provide well-rounded, athletic, recreation leisure time activities to ensure the mental, physical and social well-being of Marines, and dining, beverage and entertainment services. Revenue generating MWR activities are further responsible for providing a supplemental source of funding for MWR programs from profits.<sup>21</sup>

There are three categories of MWR activities as follows:

- CATEGORY A - Mission sustaining activities.

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<sup>21</sup>Marine Corps Order P1700.27, Marine Corps Morale, welfare and Recreation Policy Manual, (Washington, DC: 5 September 1990) pp. 1-5.

- CATEGORY B - Basic community support activities.
- CATEGORY C - Revenue generating activities.

Base/station fitness centers are classified under Category A. The MWR order for the Marine Corps states that whenever possible, appropriated funds will be used to support "hard" (mission sustaining higher priority) programs instead of "soft" (recreational priority) ones. By "hard," two things are meant: first, that the expense is clearly and unquestionably justifiable, and second, the programs are higher in priority than others. For example, programs that fit into the mission sustaining category (Category A) are normally higher priority than these programs in the community support category (Category B) and business activities category (Category C).<sup>22</sup>

The standard MWR organization at both Headquarters and at the field commands consists of the following four operational branches: Retail, Food and Hospitality, Services, and Recreation with the necessary support functions to accomplish the overall mission. The primary mission of the Recreation Operations Branch is to promote well-rounded morale, welfare, recreational, and athletic programs to ensure the mental and physical well-being of the Marines and Sailors at that Marine Corps installation. The recreation program may include, but it is not limited to, providing bowling centers, theaters, golf courses, marinas, stables, fitness centers, athletic

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<sup>22</sup>Ibid., pp. 1-9.



fields, libraries, arts and crafts, information, travel and ticket agencies, swimming pools, auto hobby shops, and skeet and trap ranges.

This breakdown of the recreation program is of great concern to the author because the fitness centers are considered in the same vein as arts and crafts and other non-essential activities in terms of preparing for combat. At Camp Pendleton, California, the Recreation Branch of MWR has an annual budget of \$4.4 million and of that amount, only \$106 thousand is appropriated. Those appropriated funds are not used to finance any specific program within the Recreation Branch, but placed in the general account. Therefore, the fitness centers have to compete with the horse stables for the use of Congressionally appropriated funds. This situation represents confused thinking about the relationship between operationally oriented combat conditioning and recreation in the Marine Corps. The thesis of the study is that fitness centers must be considered to be mission-sustaining structures and activities and should be entirely financed with appropriated funds. A Marine in superb physical conditioning is fundamental to a strong, combat ready Marine Corps. Until the Marine Corps adopts horse calvary, the financing of the stables should be done with non-appropriated recreational dollars. Appropriated dollars should be used for activities that enhance the Marine Corps' fighting ability.

Due to the fact that MWR runs the present fitness centers, there is no standardization of exercise equipment among the different Marine Corps installations. This creates problems in terms of maintenance, and ensuring each Marine has the same opportunity to train physically, no matter what duty station he is assigned to. The fitness centers at Camp Pendleton are fairly well equipped and that is due in a large part because the Camp Pendleton revenue generating MWR activities are productive. These profits are reinvested into different activities within MWR. The Marine Corps Logistic Base, Albany, Georgia, has a poorly equipped fitness center because it does not have a strong revenue generating MWR activity and physical fitness lacks command attention. This is an injustice to the Marines stationed there and at other similar stations. Every Marine must be afforded the opportunity to train physically at a well equipped fitness center no matter what the size of the duty station. This will not happen unless the operation of the fitness centers is taken away from the Recreation Branch of MWR and placed in the control of base/station operational planners and financed using appropriated funds.

A few years ago at Camp Pendleton, Colonel Gangle, the Commanding Officer of the 5th Marines, was ordered to move his Regiment from the Margaritta area to the San Mateo area. Once the 5th Marines set up its command post and occupied the barracks, Colonel Gangle signed for the San Mateo area as its

new area commander. Within San Mateo was a brand new fitness center that had taken the MWR department 16 years to build. It was its pride and joy. It didn't take long for Colonel Gangle to realize that the San Mateo fitness center was inadequate (because it lacked the proper equipment) for training his Marines physically. To remedy the situation, Colonel Gangle brought the equipment he had in the Margaritta area fitness center up to San Mateo. The equipment was placed in an old warehouse which was used more than the new fitness center. The author brings this up to reinforce the fact that if commanding officers are responsible for training their Marines physically, then fitness should not be classified as a recreational activity but a combat conditioning activity under the operational control of the commander. Currently, if an area commander at Camp Pendleton wants new equipment for the fitness center within his area, he has to justify it to the MWR department and the equipment will only be purchased if the MWR office feels it is warranted (in its opinion) and funds are available. This outlandish situation circumvents the commanding officer's authority in the vital area of the combat physical conditioning of his troops.

#### **E. SUMMARY**

1st Marine Division Order 6100.6 states that it is essential to the combat effectiveness of the Division that every Marine be physically fit, regardless of age or duty

assignment.<sup>23</sup> It is obvious that the Commanding General of the 1st Marine Division knows the importance physical fitness plays in combat effectiveness, yet the fitness centers are funded primarily by non-appropriated dollars (exchange profits, etc.) and are considered recreational assets. This situation differs significantly from that of the rifle range which is also essential to combat effectiveness. The rifle range is operated with appropriated funds (Congressionally mandated) and is staffed by trained Primary Marksmanship Instructors (PMI). Marksmanship and physical fitness are key elements to combat readiness but while the rifle range is considered an operational entity the fitness center is considered to be a recreational facility. The Marine Corps has placed the recreational "cart" ahead of the operational "horse" when linking combat effectiveness with physical fitness. It is the opinion of the author that Marine Corps has it backwards. If physical fitness is so critical to combat effectiveness then fitness centers should be considered as combat conditioning centers and its control and operation should be taken away from MWR. Combat conditioning centers should be operated as an operational entity similar to the rifle range and financed using appropriated operation and maintenance (O&M) dollars. These combat conditioning centers

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<sup>23</sup>1st Marine Division (Rein), FMF Order 6100.6, Physical Fitness, (Camp Pendleton, California: 26 January 1981) p. 1.

would still be used as recreational facilities during off duty hours.

When Major Robert Heinz, USMC, addressed the President's Council on Physical Fitness and Sports, he stated that the basis for physical training at the Marine Corps unit level was conditioning hikes and formation runs.<sup>24</sup> Although conditioning hikes and formation runs are necessary in training Marines physically, this is not enough. To develop a Marine to his maximum potential in terms of physical fitness, the training must focus on maximizing the Marines total strength, anaerobic and aerobic power. One of the best ways to accomplish this is to utilize well equipped, operationally oriented fitness centers.

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<sup>24</sup>The Presidents Council on Physical Fitness and Sports, National Conference on Military Physical Fitness 1990, (Washington, DC: pp. 25-26 January 1990) pp. 47-48.

#### **IV. ESTABLISHING COMBAT CONDITIONING CENTERS WITHIN THE MARINE CORPS**

##### **A. INTRODUCTION**

Physical fitness and discipline have long been the hallmark of the Marine Corps and an integral part of its fighting tradition. Marines must be fit to pass the ultimate test--winning on the battlefield. The knowledge that winning is dependent to a great extent upon physical fitness is imbued in all Marines, commencing with their initial training. Being fit makes Marines capable of performing at a higher level for a longer time under conditions as they strive for the ultimate goal--mission accomplishment. Marine commanders agree that physical training impacts decisively on combat readiness, but most commanders have little knowledge or experience in ways systematically to enhance their Marines physical fitness.

To remedy the existing unsatisfactory relationship between combat physical conditioning and combat effectiveness in war, the Marine Corps should take operational control of the fitness centers away from MWR offices and place the centers under the leadership of unit commanders. In other words, each commanding officer would have his own gym for the training of his Marines. Base commanders should be afforded the same opportunity operate their own fitness centers because all Marines are rifleman first, and eventually most Marines assigned to a base command return to operational units. Those

Marines must be ready to handle the rigors of prolong field operations, especially if they are assigned to infantry units.

Recent surveys<sup>27</sup> indicate that physical fitness activities and use of fitness centers are high on the list of most Marines' leisure time activities. Physical training should not be left to a Marine to accomplish off duty; time it should become an integral part of his daily training regimen no matter what his age or military occupational specialty. Among the most frequent questions asked by Marines during training at base fitness centers is: "what type of fitness training program is best?" By placing the control of fitness centers under unit commanders and staffing them with Marines qualified as physical trainers, such a question would never have to be asked again. The result would be a structured, formalized fitness training program aimed at enhancing a Marines physical readiness and at the core of this program would be the combat conditioning center (formerly the fitness center).

#### **B. COMBAT CONDITIONING CENTERS**

On every Marine Corps base there is at least one fitness center and some are large and others are small. Size and number usually are portional to the size of the base. Unfortunately not all of these fitness centers are well equipped or maintained. This situation is due in large part

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<sup>27</sup>W.M. B. Murphy, Fun & Games on K-Bay, (Alexandria, Virginia: Military Clubs & Recreation, April 1991), p. 17-20.

to the centers being managed by the base MWR office which are in turn dependent upon the vagaries of exchange profits for financial support. Although fitness centers fall into the mission sustaining category within MWR, and should be completely financed using operationally assured appropriated dollars, such is not the case. This unsatisfactory condition is mainly due to lack of command emphasis and the steady reduction in taxpayer funds for MWR programs since 1987 by Congress.<sup>28</sup> Most fitness centers, in addition are managed by individuals who are not trained as physical fitness instructors, have little management or business education experience, and no connection with military operations. Fitness centers are considered as recreational assets and not operational entities, hence the above circumstances.

The Marine Corps should take immediate steps to place the control of fitness centers under unit commanders and run them as an operational asset similar to that of the rifle range. Most physical training events pivot around the fitness center -- changing clothes, "working out", withdrawing equipment, showering, etc. If the Marine Corps were to make such a change, it should proceed as follows:

a. Existing fitness centers should be redesignated as combat conditioning centers. If additional buildings are needed to support each commander, then the base should be

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<sup>28</sup>Committee Formed To Re-Evaluate MWR Programs, (Spring Field, Virginia: Grant Willis, Air Force Times, 15 July 91), p. 17.



canvassed in an attempt to identify potential buildings. Satisfactory structures should not be too difficult to locate because many barracks (squad bay type) are being replaced with individual-room, bachelor enlisted quarters, many dining facilities are being consolidated, and old vehicle maintenance buildings are being replaced by new ones. If existing structures cannot be utilized, then the requirement for a new combat conditioning center should be identified at the next military construction review.

b. The new combat conditioning centers should be utilized not only for training specific units but also for recreational use by Marines, dependents, retirees, etc. The author would recommend following operating schedules similar to the following:

1. Unit Combat Conditioning

Monday through Friday

0700-1100, 1300-1630

2. Recreational Activities

Monday through Friday

0530-0700, 1100-1300, 1630-2200

Saturday, Sunday and Holidays

0800-2200

Although the Marines (trained as qualified fitness instructors) would staff the combat conditioning center during unit training hours and MWR appointed civilians would staff

the center during recreational hours, both Marine and civilian staff would come under the cognizance of the activity duty SNCO in charge. This system would be very similar to the way the Marine Corps operates its ranges. At Camp Lejuene, North Carolina, recreational pistol shooters are allowed to fire their weapons on the base pistol range during off duty hours (usually on the weekend). The range is still run by the officer in charge of the range detail, and yet the Marine, dependents and retirees can get maximum use of the range for the required annual regualification and also for recreational use.

c. Each combat conditioning center should be equipped with the same equipment. This is a long term goal that will take time to implement, but in the interim, the Marine Corps should redistribute and purchase equipment so that each Marine has the opportunity to reach his maximum potential physically.

d. The combat conditioning centers should be managed by a certified physical fitness instructor. This Marine should be a staff Non-commissioned Officer (SNCO) with the rank of Staff Sergeant or Gunnery Sergeant depending on the size of the facility. He would report to the organization's S-3 officer (operations) and be on the commanding officers special staff as his advisor for physical fitness training. The Marine who manages the fitness center would have additional Marines from the parent command to support him in developing

fitness programs for unit training at the combat conditioning center, and civilians from MWR who would run the recreational programs during the hours mention in paragraph 2b immediately above. Most importantly, this SNCO should receive a secondary MOS as a physical fitness trainer, similar to Marines on recruiting duty, so that he may stay competitive with his contemporaries for promotion purposes. This would signal to those selected SNCOs that the Marine Corps is serious about training Marines physically for the rigors of combat.

#### **C. FINANCING THE COMBAT CONDITIONING CENTERS**

It is easy to suggest a change in the way the Marine Corps operates its fitness centers, but the question remains: how can the Marine Corps finance the purchase of equipment, pay civilian staff members, and provide daily maintenance of the facility? In answer the author recommends the following action:

a. The purchase of new equipment and the maintenance of the facility, should be financed by using operational and maintenance (O&M) funds. The payment of salaries for the civilians who would run the recreational aspects of the new centers, should come from the MWR Office. The rifle ranges for example, are financed with O&M funds and the situation should be the same for the new combat conditioning centers, because they both are integral necessities for the overall combat effectiveness of the Marine Corps. Such financing may sound like a bold idea with current budget cuts, but the

author would recommend additionally in similar vein putting Marines back in the dining facilities as messman. At Camp Pendleton, California, over \$1 million (appropriated funds) is spent annually on civilian messman, a situation which is a travesty, because the civilian mess service is poor (author's experience as 3d Marines S-4A) and the money could be better utilized, for example for training at the combat conditioning centers.

Under the direction of the Department of Defense (DoD) Comptroller (Mr. Sean O'Keffe), a Defense Business Operations Fund (DBOF) is being established. Under the current system, costs are usually allocated to the activity that incurred the cost; under DBOF, the cost will be allocated to the activity that benefitted. In other words, every time a Marine uses the fitness center, his parent command would be charged accordingly. The goal of DBOF is to get DoD to operate like a business and identify each cost incurred. The Defense Business Operations Fund has some merit, but if the commanding officer of a unit feels the cost to use the fitness center is excessive, he may choose not to allow his unit to use it in an effort to save money. Again, the one who loses is the individual Marine. It would be analogous to charge a Marine's unit for his annual requalification with the M-16A2 rifle. Defense Business Operations Fund is a viable program when dealing with base public works departments, etc., but in the author's opinion, it has no place in trying to quantify the

cost of training a Marine. It is imperative, therefore, that the commanding officer have his own combat conditioning center so he does not have to reimburse another command for the use of a fitness center existing primarily in support of combat readiness.

#### **D. QUALIFY MARINES AS PHYSICAL FITNESS TRAINERS**

If the Marine Corps is to have a viable physical conditioning program, it must have qualified individuals in the area of physical conditioning. As mentioned earlier, the author recommends selecting Staff NCOs as potential candidates and then sending them to an appropriate school so that they may be qualified as physical conditioning trainers. The ideal school would be one established at Quantico, Virginia, possibly under the guidance of the Marine Corps University. In essence, this school would be the Marine Corps Physical Fitness Academy where selected Marine Physical Fitness Trainers would be educated in their new MOS and the Marine Corps University would develop and promulgate Marine Corps doctrine concerning physical fitness. In order to accomplish this mission, the school would need a staff of trained civilian instructors, as well as a Marine staff to ensure that the civilian instructors would address the requirements of the Marine Corps. A Fitness Academy at Quantico, Virginia would set the tone for physical training throughout the Marine Corps and would be the key element in the success of the Marine Corps combat physical fitness training program.

## V. CONCLUSIONS AND RECOMMENDATIONS

*Nations have passed away and left no trace, and history gives us the naked cause of it; one simple reason in all cases; they fell because their people were not fit.*

*Rudyard Kipling*

The need for physical fitness and physical training in combat is old as war itself. In ancient Greece, citizens were required to train themselves to carry the shields, body armor and long spears of the day. The same was true for Romans of the Republic and early empire. Later, however, the physical fitness and military training of the average Roman soldier declined - a decline that contributed to the development of standing, mercenary armies.

In the armed forces, physical fitness is absolutely essential to the readiness of the Marine Corps and statistics reveal that physically fit individuals are more productive, more capable of handling stressful situations than individuals who are not.<sup>25</sup> Physically fit commanders concerned about their own health are more likely than sedentary leaders to be concerned about the fitness health of their Marines. Physically fit Marines reduce the occurrence of medical problems and injuries during training. Hard work and fitness

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<sup>25</sup>The President's Council on Physical Fitness And Sports, National Conference on Military Physical Fitness, (Washington, D.C.: 25-26 January 1990), p. 30.

training help build teamwork and a close-knit organization. Sports team competition can also help do this. Marines become more aware of each other's capabilities, an important factor in the Marine Corps because Marines function in integrated teams in combat.

There is a psychological value to good fitness. A military force that continually demonstrates its fit-to-fight characteristic accrues prestige that can be considered a peace dividend and internationally recognized force. The knowledge that the Marine Corps is physically fit and capable of getting the job done whenever and wherever it goes, must have a positive impact on friends and be a deterrent to foes.

#### **A. CONCLUSIONS**

Physical fitness is required for effective performance in combat. Fitness necessary for the optimum performance of military tasks and overall combat readiness can be achieved through operationally oriented physical training programs. Three aspects of combat fitness training deserve particular mention:

a. Strength training is important despite the mechanization of war, and progressive weight resistance training is more effective than calisthenic exercises for developing strength.

b. Upper body strength and anaerobic fitness training are required for tasks such as load bearing marches, trenching, ammunition handling, and the fundamental tasks of carrying

rifles. Physical training limited only to running is not sufficient for such tasks.

c. Typical military fitness training programs can produce improvements in  $\text{VO}_2$  (maximum oxygen uptake) max of 5-15%. These higher levels of aerobic fitness can be maintained by a minimum training frequency of three times per week at an intensity of approximately 70% of maximal aerobic power.<sup>26</sup>

The level of physical fitness determines the work rate that can be maintained during periods of sustained military operations; consequently, high levels of all kinds of fitness (strength, anaerobic and aerobic) are required in order to undertake the prolonged physical activity which may be encountered. Suitable training programs will produce benefits in terms of military effectiveness. Older age groups (greater than 35 years) within the Marine Corps can safely participate in physical training and testing procedures provided that certain precautions are taken regarding preliminary medical screening, supervision and exercise procedures. There is no evidence that physical fitness can be detrimental; conversely, optimum physical fitness is necessary for combat readiness and contributes also to the health and well being of Marines. The first premise in this thesis is that of all the operational training that a Marine could receive during his tour of duty, combat physical conditioning is probably the single most

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<sup>26</sup>Nato Research Study Group on Physical Fitness Physical Fitness in Armed Forces, (North Atlantic Council: 3 October 1986), p. 36.



important element. Physical conditioning training is more susceptible than any other training to systematic, scientific application and tangible increases in performance.

For the past 216 years the Marine Corps has been this nation's force in readiness and it will continue to be so into the future. It is not the author's contention that Marines are unfit physically, but that the Marine Corps must place greater emphasis of physical fitness training. To the Marine Corps, physical fitness is essential for combat readiness, but even with this heavy emphasis on physical conditioning and training, the goal is not to develop supermen but to develop men capable of completing the assigned mission of the Marine Corps. Therefore, based on the arguments and premises mention in the previous pages, the author would encourage the leadership of the Marine Corps to accept the following recommendations.

## **B. RECOMMENDATIONS**

### **1. Reestablishment Of The Marine Corps Physical Fitness Academy At Quantico, Virginia**

In any physical fitness program, the Marine Corps must have qualified people. To meet this requirement, a Master Fitness Training Program should be established at the Marine Corps Physical Fitness Academy. This program would train selected Marine Officers, Staff NCOs and NCOs as physical fitness trainers. Once these Marines have completed the training at the Marine Corps Physical Fitness Academy, they

would be assigned an additional military occupational specialty (MOS) as a physical fitness trainer. The Marine Corps, for example, currently assigns an additional MOS to its recruiters and primary marksmanship instructors. A fitness trainer might have a primary MOS of infantryman, motor transport mechanic, artilleryman, etc. The Marine would be sent to Quantico for six to eight weeks to train on how to conduct physical fitness programs, and then be assigned to an operational unit as a special staff member of the Commanding Officer with primary duty as Physical Fitness Trainer. The German Armed Forces Sports Program mentioned in Chapter II, would be an excellent example to use when reestablishing the Marine Corps Physical Fitness Academy. The Academy could also serve as the headquarters and training area for all varsity sports within the Marine Corps.

## **2. Fitness Centers (Gyms) Should Be Combat Conditioning Centers Rather Than Recreational Assets**

If the Marine Corps were to train its Marines properly in terms of physical fitness (strength, anaerobic and aerobic training), then the operation of fitness centers would play a key role. Each major unit Commanding Officer should have a well equipped combat conditioning center (fitness center) under his control for training his Marines. All fitness centers should be equipped identically. The only variation would be that a larger unit would have a proportionally larger fitness center than a smaller unit. The fitness center would be under the control of the unit's S-3 Officer (operations)

and managed by the Commanding Officer's Physical Fitness Trainer. During normal duty hours the fitness center would be utilized for unit training and during off duty hours it would be used for general recreational purposes. The fitness center should be financed using appropriated funds. By placing the fitness centers under the operational and financial control of the Commanding Officer, the Marines Corps would enable him to effectively carry out the requirements set forth in MCO 6100.3J.

### **3. Issue A Standard Physical Training Uniform**

When a Marine successfully graduates from "boot camp" or Officer Candidate School, he should be issued a standard Marine Corps physical training uniform. This would help signify the importance of physical fitness within the Marine Corps and build morale and esprit de corps. The Marine Corps currently gives uniforms to the "gifted" athletes in varsity sports. It is more important that this same privilege be extended to the Marine combat rifleman who will eventually be ordered to close with and destroy the enemy. The physical training uniform should be complete, including shorts, shirt, warm up suits, and athletic shoes.

### **4. Marines Who Are Assigned To Independent Duty Should Be Given An Allowance To Join A Local Fitness Center**

Marines who are assigned to Independent Duty (recruiting, Inspector/Instructor to a reserve center, etc.) usually do not have access to a well equipped fitness center. These Marines are very competitive and are usually rated with

the top 10% of their contemporaries. These Marines are in public view but have to use their own money to join a local fitness center if they want to maintain the "holistic" concept and find it frustrating when assigned to expensive geographical areas because they cannot afford to join a fitness center. Marines assigned to independent duty should be afforded the same opportunity for physical training as fellow Marines in the Fleet Marine Force. Marines on independent duty should be reimbursed by the Marine Corps when they join a local fitness center. This would build morale and also ensure that Marines on independent duty realize the same commitment to physical fitness as Marines assigned to a Fleet Marine Force unit.

The theme of this study is that there is a direct correlation between combat effectiveness and physical fitness. Not many people would doubt this, but the difficult question to answer is how the leadership of the Marine Corps can enhance the level of physical fitness of the individual Marine. Although physical fitness is probably the single most important combat performance factor for each Marine, the Marine Corps lacks an aggressive, formally structured fitness program. There are Marine Corps orders, presently, that require commanders to establish viable fitness training programs, but most commanders do not possess the knowledge or experience to implement such programs. Current physical training directives allow commanders to leave physical

training up to the individual during his off duty hours. This situation must cease and physical training throughout the Marine Corps be recognized as an operational evolution conducted during regular working hours.

The author would suggest that the listed operationally styled recommendations be implemented as soon as possible. The investment of money, time and energy in operationally directed combat physical conditioning, would produce tangible results almost immediately in terms of scientifically measurable strength (lift capacity), anaerobic power (muscular endurance), and aerobic vigor (cardiac output and oxygen exchange). The benefits realized would be a Marine who would be able to maximize his physical potential and most importantly develop a confidence in himself that would enable him to accomplish any task assigned. This is critical as the Marine Corps is facing certain reduction in numerical strength, and yet, the requirements for the Marine Corps will not diminish. It is imperative, therefore, that the Marine Corps continue to focus on its most important asset; the individual Marine. If the Marine Corps is to continue be a viable force in readiness, combat physical conditioning must be an integral part of any effective training for modern war fighting.

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